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Soldiers typically under eat relative to their caloric expenditure during field training. Carbohydrate supplements in liquid and solid form have been developed to provide a means of enhancing carbohydrate and total caloric intake when soldiers are likely to consume insufficient rations. This report summarizes the results of a taste test performed during a seven-day field training exercise. Marines were provided five packets of ERGO Drink (Soldier Systems Center-Natick, Soldier Biological Chemical Command, Natick, Massachusetts) per day during the training exercise. They completed a questionnaire at the end of the 7-day sampling period. The soldiers rated the ERGO Drink as very good and thought it was a very valuable product for use in the field, particularly when relying primarily on MRE for food. The packaging was also highly rated. The students chose to dissolve the powder either in their canteen or within the packet itself. On other occasions they consumed the drink as a powder. The canteen cup was generally not utilized for fluid delivery. These results document the usefulness and acceptability of carbohydrate beverage powder for field use. Novel means of packaging should be pursued to encourage consumption directly from the drink packet, thus avoiding contamination of the canteen with carbohydrate.

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USARIEM TECHNICAL REPORT

ACCEPTABILITY OF CARBOHYDRATE DRINK SUPPLEMENTATION DURING THE MARINE CORPS INFANTRY OFFICER COURSE 10-DAY FIELD TRAINING EXERCISE

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TABLE OF CONTENTS

LIST OF FIGURES

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EXECUTIVE SUMMARY

Soldiers typically under eat relative to their caloric expenditure during field operations. Carbohydrate supplements in liquid and solid form have been developed to provide a means of enhancing carbohydrate and total caloric intake when soldiers are likely to consume insufficient rations. This report summarizes the results of an acceptability test performed during a seven-day field exercise. Seventy-nine Marines were provided five packets of ERGO Drink (Soldier Systems Center, US Army Soldier Biological Chemical Command, Natick, Massachusetts) per day during the operation. They completed a questionnaire at the end of the operation. The Marines rated the ERGO Drink as very good and thought it was a very valuable product for use in the field, particularly when relying primarily on Meals, Ready-to-Eat (MRE) as the primary source of food. The packaging was also highly rated. The Marines were divided in their preferred method of consumption, choosing to either dissolve the powder in their canteen or within the packet itself, and occasionally consuming the drink as a powder. The canteen cup was not utilized as means of consumption. These results document the acceptability and advisability of carbohydrate beverage powder for field use. Novel means of packaging should be pursued to encourage consumption directly from the drink packet, thus avoiding contamination of the canteen with carbohydrate.

INTRODUCTION

Soldiers working in field environments typically under eat relative to their caloric expenditure (Baker-Fulco, 1995). This behavior results in not only inadequate caloric intake but also inadequate carbohydrate intake to maintain carbohydrate energy reserves and physical performance (Montain et al., 1997). Recently, scientists at the Soldier Systems Center, US Army Soldier Biological and Chemical Command, Natick, Massachusetts developed a carbohydrate beverage base designed to supplement field rations. This item, termed the "ERGO Drink" is a 12% mass/volume blend of maltodextrin, glucose and fructose (9%, 2%, and 1%, respectively). Five flavors are available (Lemon, Lemon-lime, Raspberry, Tropical Fruit, and Punch). It is packed in a 9x13 cm pouch containing 47 g of carbohydrate (170 kilocalories). When diluted to proper strength, the package provides a 0.35 liter (12 ounce) beverage. This report summarizes the acceptability and utility of this carbohydrate supplement for field use.

METHODS

SUBJECTS

Seventy-nine male students in Infantry Officer Course, Class 5-99, The Basic School, Marine Corps Combat Development Command, Quantico, Virginia 22554, volunteered to participate in this study. During the sampling period, they were participating in a 10-day field exercise. The Marines were informed of the purpose and methodology of the experiment prior to beginning the field exercise.

EXPERIMENTAL DESIGN

During the first seven days of the ten-day field exercise, the Marines were provided a sufficient quantity of ERGO Drink to enable each Marine the opportunity to consume 5 ERGO Drink packets per day. They were issued the packets prior to the field exercise and during one re-supply point during the course. No restrictions were placed on the number of drinks per day, time of day of consumption, or method of consumption. The Marines were simply asked to consume the drinks during the exercise and provide feedback via a questionnaire after seven days of sampling.

The field exercise consisted of daily force-on-force operations, designed to develop leadership skills during combat-like conditions. Sleep periods ranged from several hours per day during the initial days of the operations to short naps during the final days of the exercise. Daily activities included planning and preparation, combat maneuvers, and de-briefing. The daily caloric expenditure in an earlier class was approximately 6,000 kilocalories per day. The students were provided five Meals, Ready-to-Eat (MRE) at the beginning of the field exercise and at one re-supply point, thus limiting caloric intake from MRE to approximately 1300 kilocalories per day.

ERGO Drink flavors provided were Lemon and Tropical Fruit. No verbal instructions were given regarding how to prepare the beverage base, but the package instructs the user to "mix the contents of one package in 12 fluid ounces of water. Stir until the powder dissolves."

Following completion of the course, Marines completed a questionnaire (Appendix B) regarding acceptance, utility and preparation issues.

STATISTICAL ANALYSIS

Means, medians, and frequency distributions were calculated using SPSS statistical software. Chi squared analysis was performed to identify flavor preference. Data are presented as mean±sd. When mean and median responses are presented together, the following format is used: mean±sd; median.

RESULTS

SUBJECT CHARACTERISTICS

The Marines averaged 25±2 years of age (range 22-33 yr.). Their self-reported supplement use is presented in Figure 1. Forty-eight of the 79 (61%) Marines reported that they were nutritional supplement users. Twenty-eight of the Marines (35%) reported taking vitamin and/or mineral supplements at least once per week. Fewer Marines (13 of 79; 16%) reported taking amino acid or protein supplements (including creatine) once or more per week.

The Marines were familiar with sports drinks, sports bars and carbohydrate gels. Twenty-six of 79 (33%) reported drinking carbohydrate sports drinks one or more times per week. An additional ten Marines consumed them on an occasional basis. Thirty-nine of 79 Marines (49%) ate sports bars at least occasionally, while 24 of 79 Marines (30%) had consumed carbohydrate gels prior to the course.

The Marines had mixed opinions on the adequacy of the field rations as only 37 of 79 (47%) felt that their nutritional needs were met by the MRE. The most frequent written comments were that the field rations did not contain enough food and/or calories (n=27), and that the ration was either too high in fat or did not contain enough complex

carbohydrates, protein, and vegetables (n = 16). It is noteworthy that the Marines unanimously thought that supplements should be added to the current ration system.

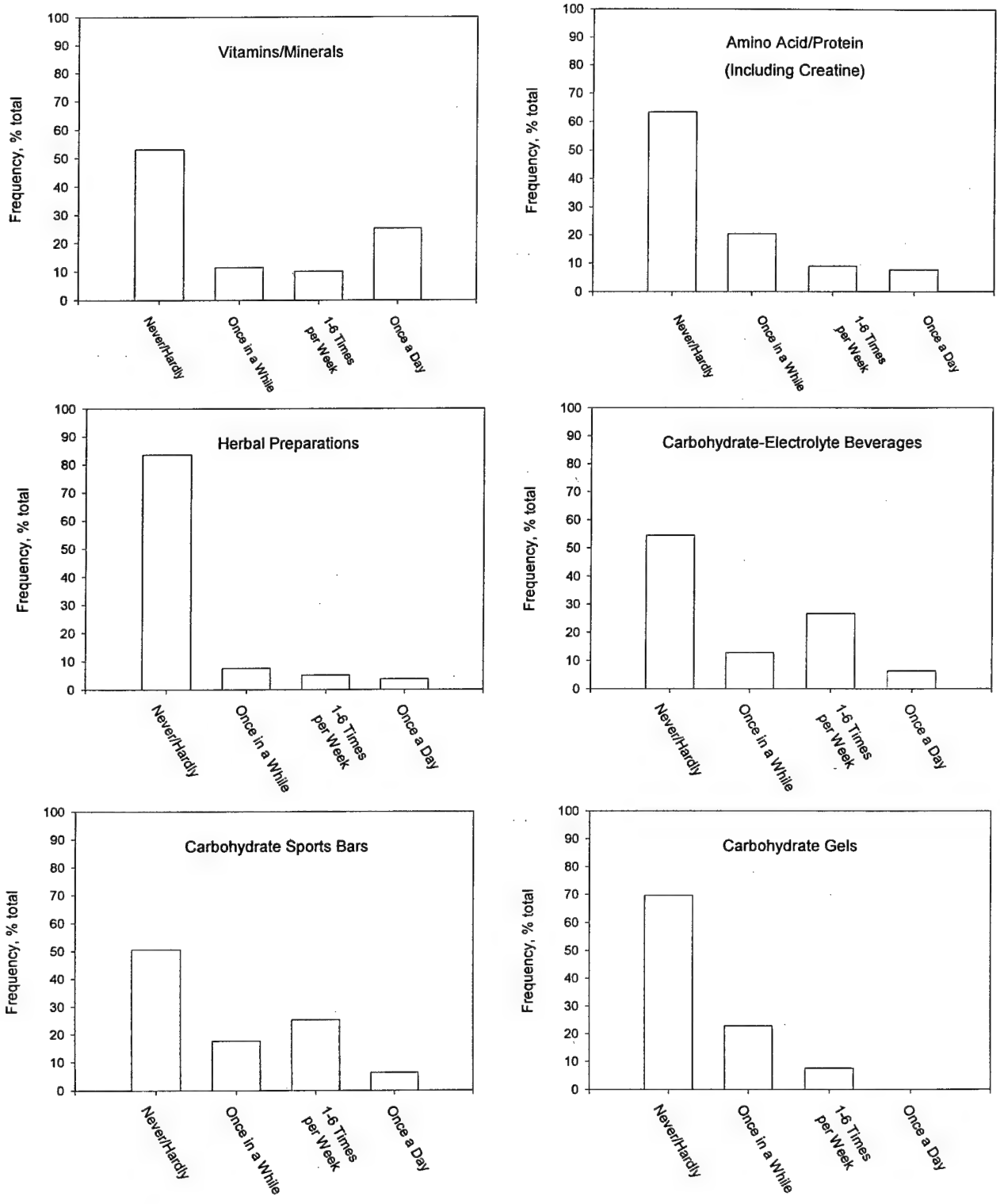

Figure 1. Nutritional supplement use.

ACCEPTABILITY OF ERGO DRINK

Figure 2 presents the mean and median responses of the group regarding product acceptability. The appearance, flavor, smell, sweetness, and overall acceptance were quite high. Figures 3 and 4 present the frequency distributions of the same data. The Marines only slightly to moderately liked the appearance and smell of the ERGO Drink; largely due to many Marines providing a neutral response. Flavor and sweetness scored higher marks with both mean and median scores ranging from "like moderately" to "like very much."

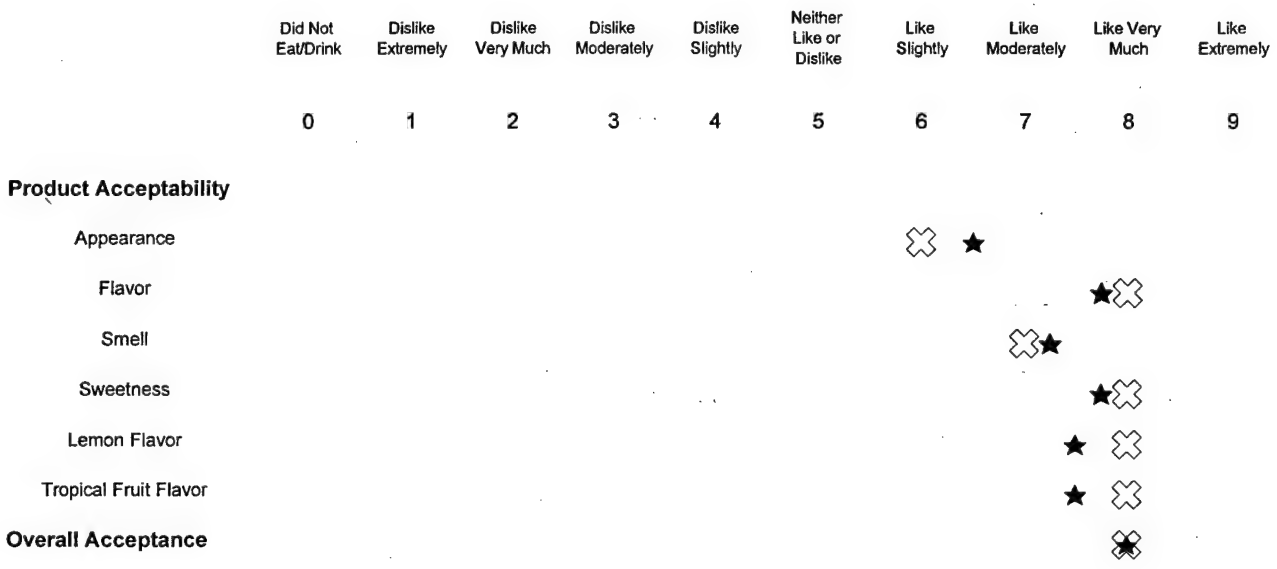

Figure 2. Mean (filled star) and median (unfilled x) responses regarding ERGO Drink acceptability.

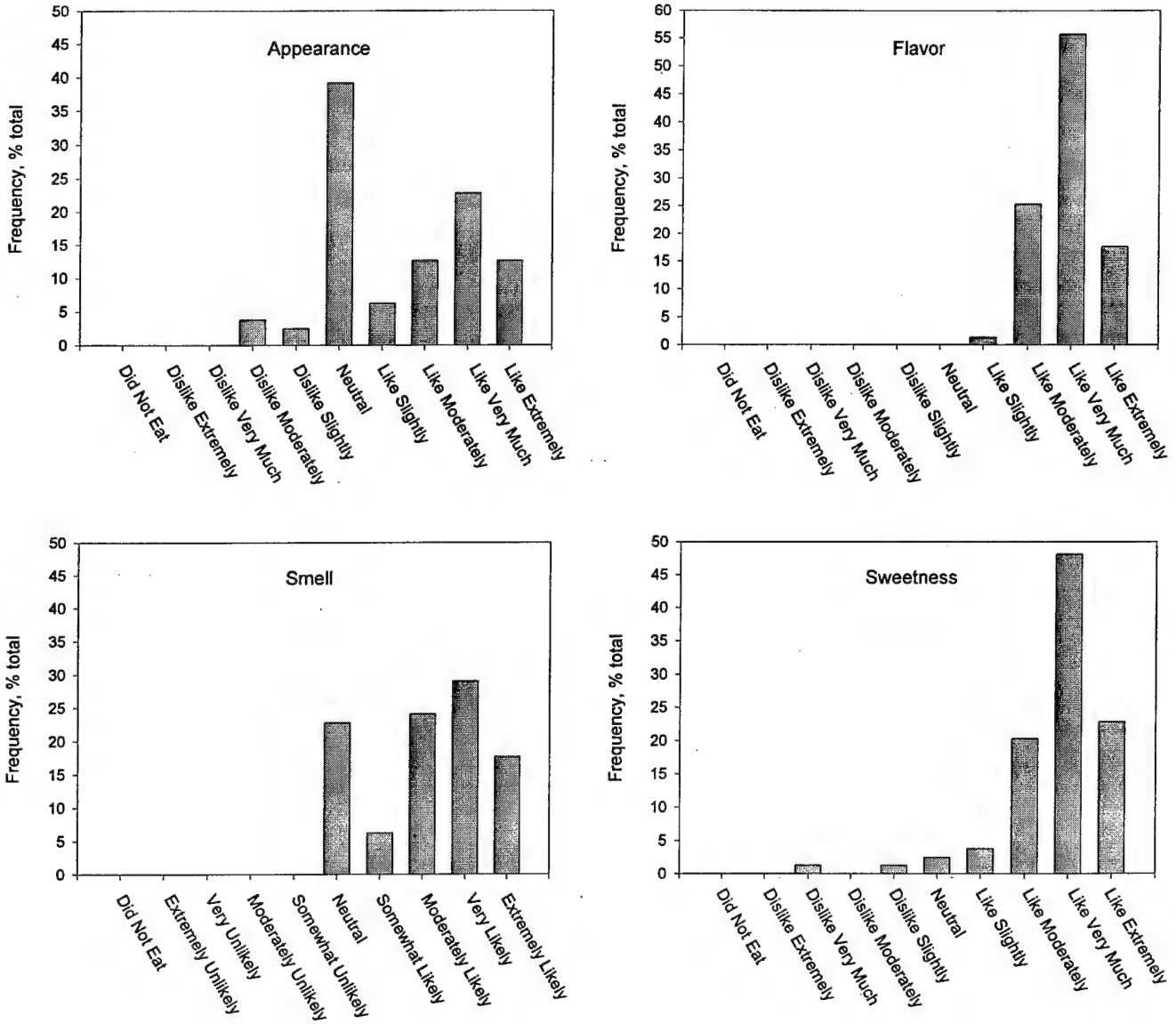

Figure 3. Frequency distribution of selected ERGO Drink acceptability parameters.

Both flavors received favorable scores. Seventy percent of the volunteers rated the lemon flavor ERGO Drink a 7 to 9 on the 9-point scale (moderately like to extremely like). Ninety percent of the Marines rated the tropical fruit flavor a 7 to 9 on the same scale. Chi square analysis revealed no difference in drink flavor acceptability (χ^2 = 1.57).

The majority of Marines thought the ERGO Drink would be a valuable ration supplement, with 85% of responses within the "very likely" to "extremely likely" categories. When queried about the likelihood of consuming the ERGO Drink if it was available as a supplement to their rations, 73% selected "extremely likely" and none picked a response below "neutral."

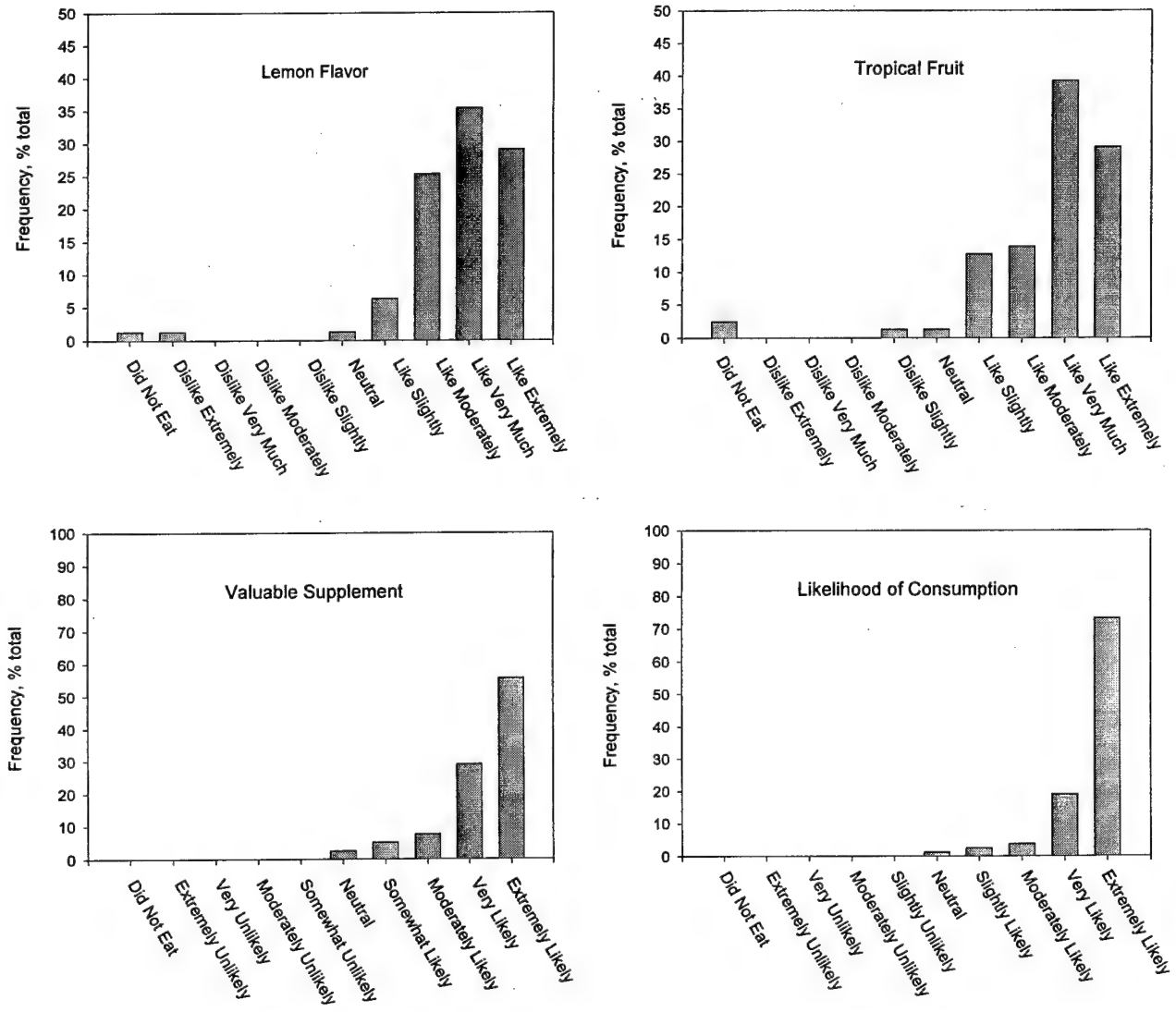

Figure 4. Acceptability of ERGO Drink flavors, value as a ration supplement, and likelihood of consumption if available.

ACCEPTABILITY OF ERGO DRINK PACKAGING

Figure 5 illustrates the frequency distribution of responses regarding the ERGO Drink packaging. The package size appeared appropriate for field operations, as it was rated "just right" in size (2.75±0.79; 3.0 on 5 point scale). The package was rated as "very easy" to open (7.9±1.1; 8.0) as well as "moderately" to "very easy" to use (7.5±1.4; 8.0). The Marines generally felt the portion size was adequate, but would prefer a somewhat larger size (6.0±1.1; 6.0). Seventy-eight of 79 Marines (99%) preferred a soft package to a hard package. Sixty-three of 79 (80%) of the Marines preferred powder form to dissolvable paste (n = 6; 8%) or tablet (n = 10; 13%).

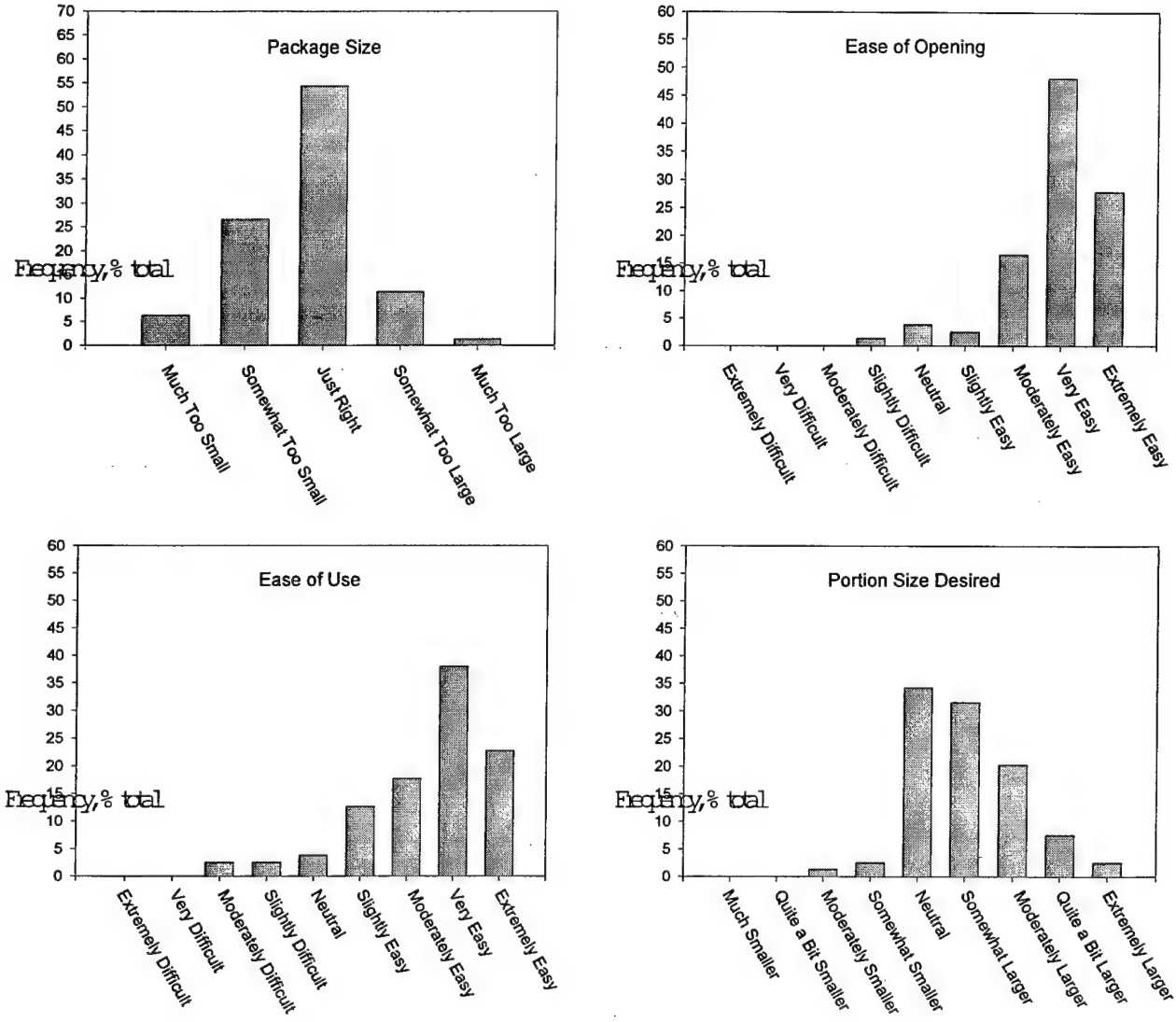

Figure 5. Acceptability of ERGO Drink packaging.

METHODS OF CONSUMPTION

To assess the method of ERGO Drink consumption, the Marines were asked a single multi-part question in which they were to rate the proportion of time they either consumed the ERGO Drink as a powder (straight from package), dissolved in their canteen cup, dissolved in their canteen, diluted in the ERGO Drink package, or by some other means. Fifty-nine of 79 Marines (75%) completed the questionnaire correctly. The remaining 20 questionnaires had certain options unmarked, didn't properly account for time (e.g., "one method always" and another "some of the time") or the question was left unanswered. Of these 20 questionnaires, 9 were dropped from the analysis and the other 11 were modified to properly account for time. If a soldier stated that they always used one method and sometimes another (the most frequent incorrect response), the "always" was modified to "most of the time." Similarly, if the Marines had neglected to mark "never" on an option, but relative proportion of use for other options was adequate to account for 100% of use, "never" was marked for that option. Figure 6 summarizes the methods of ERGO Drink consumption for the 59 appropriately filled out answers and the 11 modified questionnaires.

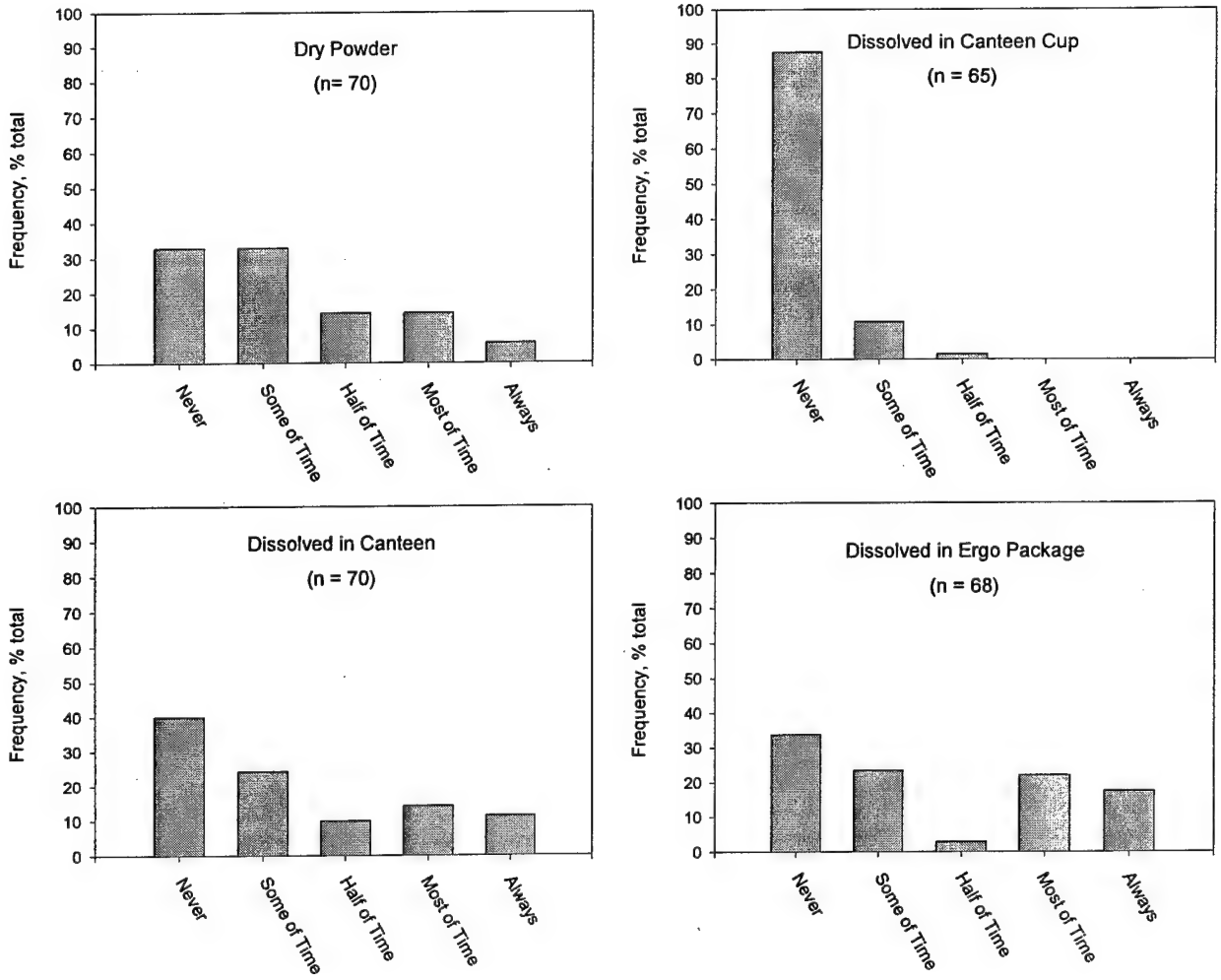

Figure 6. Frequency distribution of the individual methods of ERGO Drink consumption during 7 days of field training.

It is clear that very few Marines chose to dilute the ERGO Drink in their canteen cup. Instead, the methods of choice were either to dissolve the drink powder in their canteen, add water directly to the ERGO Drink pouch, or consume the product as a dry powder. Twenty-nine of 68 respondents (43%) chose to dissolve the ERGO Drink in their canteen at least ½ time. Thirty-one of 68 respondents (46%) chose to add water to the ERGO Drink packet ½ time or more. The other method used at least "some of the time" was to eat the powder straight from the package. This latter method was used by

51of 67 (76%) Marines at least occasionally, and 25% used it as their primary means of intake.

Most Marines chose more than one method to consume the ERGO Drink. Figure 7 illustrates the relative usage for those individuals who reported dissolving the ERGO Drink in their canteen, dissolving it in the ERGO package, or eating it as a dry powder. Most common (24%), was to chose all three methods of consumption. Next most common were to consume the ERGO Drink as a dry powder, at least part of the time and to either dissolve it in the canteen (19%) or dissolve the powder inside the ERGO Drink package (17%) the rest of the time.

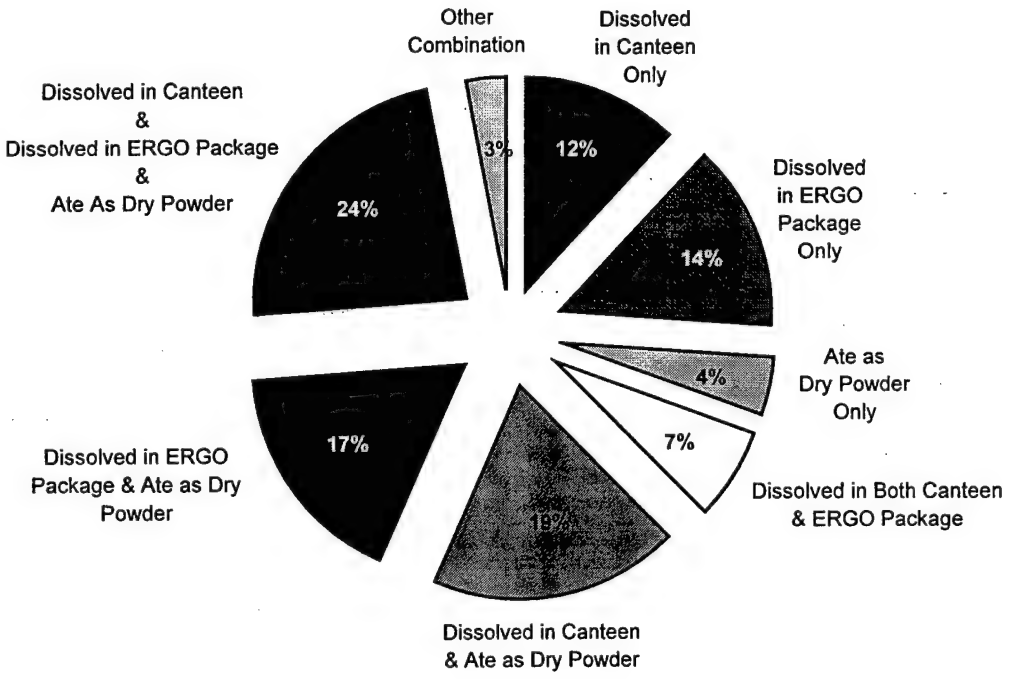

Figure 7. Behavioral strategies for consuming the ERGO Drink during the 7-day field exercise.

UTILITY OF CARBOHYDRATE LIQUID SUPPLEMENTS FOR USE IN MILITARY ACTIVITIES

The frequency distributions regarding expected use of carbohydrate drinks in selected military venues are presented in Figure 8. The expected use in garrison was varied among the Marines, with the most frequent response being "somewhat likely". Expected use in field venues was higher, reaching a mean numeric score of 7.1±1.8 and 8.7±0.7 when relying on field kitchen and MREs, respectively. These numeric scores equate to "moderately likely" and "very likely". Marines, furthermore, expected that the drink would be most commonly consumed during physical training (mean = 8.0±1.4) vs. during rest (mean = 7.0±1.9) or with meals (mean = 7.1±1.9).

OVERALL RATING OF ERGO DRINK

The ERGO Drink received an overall score of 8.1±0.9 which equates to "like very much". Frequency distribution of individual responses is shown in Figure 8. Sixty-six of 79 (84%) rated the ERGO Drink "like very much" or "like extremely". No one surveyed rated the ERGO Drink unfavorably.

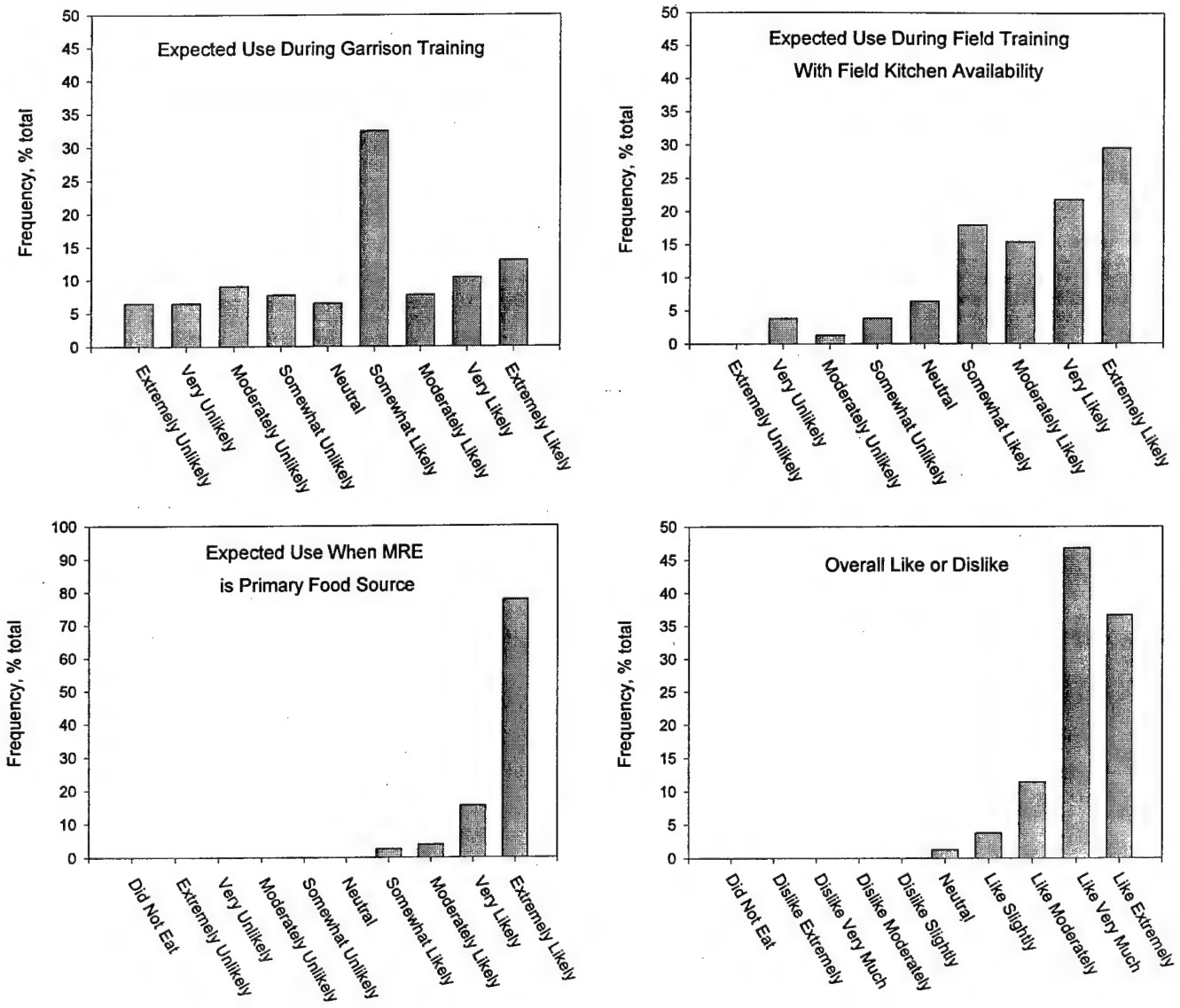

Figure 8. Expected use during different training environments and overall like or dislike.

WRITTEN COMMENTS

The Marines had the opportunity to provide written comments after several of the questions. Twenty-two of those surveyed stated that they thought the ERGO Drink should be added to the MRE and/or will use the product again if it becomes available. When queried about additional/alternate flavors, 10 suggested grape, 5 suggested cherry, and 4 each recommended orange and strawberry. As for improving the product,

the most frequent recommendation (n = 10) was to increase package size so that the beverage can be prepared in it's package. Less frequent (n = 4) was a complaint that the 2-ply package comes apart or is flimsy. Other suggestions received more than once recommended: easier dissolution, a bar and/or gel form, packet quantity appropriate for 1 Qt. canteen, resealable package and/or easier to consume on the move.

DISCUSSION

The results of this evaluation during repeated days of field exercises demonstrate the high acceptability of the ERGO Drink as a ration supplement. The two ERGO Drink flavors examined, tropical fruit and lemon, were both given very favorable hedonic ratings, and the product was given an overall score of 8 on a 9-point scale.

The results also demonstrate that military personnel will use and appreciate this type of product during field training exercises. The Marines verbally told the scientific staff that they looked forward to drinking the ERGO Drink each day and when queried about the likelihood of using this product if it were available, the ERGO Drink received a remarkable 9 on the 9-point scale.

The ERGO Drink's flavor, smell and sweetness also scored very well. These high marks occurred despite the fact that for most of the time, the drink was consumed in a form more concentrated than recommended. This could mean that the Marines in this study may have preferred sweet tasting items. Alternatively, the high proportion of maltodextrin in the beverage may have limited excessive sweetness when it was consumed in more concentrated form. The use of maltodextrin provides the ERGO Drink a possible advantage over other products relying on glucose, sucrose and

fructose for carbohydrate, since the ERGO Drink features significantly more carbohydrate without excessive sweetness. Whether Marines would rate other products equal to, lower or higher than the ERGO Drink remains untested as is the question of whether there is any physical and/or cognitive advantage of consuming the ERGO Drink over commercial sports drinks.

The multi-day assessment has clear advantages over a single sampling sessions as it enabled evaluation of the ERGO Drink over many hours of work and many repeated samplings. Repeated use also provided the opportunity for the Marines to determine the "best" method of field consumption – an important issue since the product is expected to be used most by physically active troops with limited access to food or time to eat. It is noteworthy that the ERGO Drink was so favorably received as it might have been expected that the two flavors would become monotonous over an extended sampling time. Whether the distinctness of the two flavors enhanced the acceptability of each individually and/or reduced potential monotony is unknown. When considering the extremely high hedonic ratings, it must be acknowledged that rations were purposefully restricted during the course, despite high levels of physical activity. Caloric restriction may therefore have inflated the ratings of the ERGO Drink compared to assessment under more calorically balanced situations. Nevertheless, one MRE per day for dismounted forces, who commonly carry in excess of 45 kg, is a realistic daily food intake for operational forces.

Whether the ERGO Drink improved the cognitive and physical capabilities of the Marines was not examined. However, several course instructors commented that the class appeared less physically and mentally strained compared to previous classes.

Furthermore, unlike previous classes, the Marines in this study never developed the qualitative signs of ketosis.

Despite the high acceptability scores given the ERGO Drink, the results are restricted to the two flavors tested. While we would have preferred to examine the acceptability of all five flavors, the other three flavors were not available for evaluation at the time of the study. Future studies should evaluate the acceptability of the remaining flavors.

The ERGO Drink packaging also received above average marks. Important to highly mobile troops, the package was rated as very easy to open and use. While portion size was acceptable, there was some interest in making the portion size somewhat larger. This could have, in part, been driven by the interest of some individuals for packaging the beverage for a 1-Qt container rather than the ½ Qt canteen cup.

The two most common methods of consumption were as a slurry directly from the ERGO Drink package and as dry powder. Seventy percent of the Marines chose to mix the powder in the ERGO Drink package at least some of the time and 42% chose this method "most of the time" or "always". This suggests that modifications to the ERGO Drink package should be considered to make the package more usable as a drink container. Several Marines provided written comments suggesting that the package be made somewhat larger and less flimsy. The majority (99%) of Marines preferred it remain a soft package.

Few of the soldier chose to mix the ERGO Drink in their canteen cup. Fifty-seven of 65 Marines who answered the question (87%) never mixed the ERGO Drink in

the canteen cup and only one soldier used this method more than ½ of the time. Cup usage was likely limited due to the inconvenience of removing the canteen cup from the canteen holder, reluctance to clean the canteen cup, and the availability of more convenient means to ingest the product. Due to the unpopularity of this method, some modification to the instructions should be considered, as it is unlikely that the product will be used in the canteen cup.

It is important to note that 68% (47 of 69) of the Marines used their canteen to dissolve the ERGO Drink and 33% (23 of 69) used this as their primary method of ingesting the drink. This raises concerns about potential water container contamination, as well as lack of water for wound cleaning. It is well recognized that the addition of carbohydrate will promote mold and bacterial growth, while some flavorings can impair water purification technologies. Efforts should be taken to reduce the likelihood of carbohydrate drinks being stored in the canteen (e.g., education, a warning label on the packet) or making canteen sanitation a high priority for military personnel working in field environments

Additional improvements to the beverage powder and/or packaging should also be considered. As many Marines mixed the product inside the ERGO Drink packet, water was added to the product. In such conditions, maltodextrin does not readily enter into solution but rather remains lumpy. One solution would be to alter the packaging so that the powder could be added to water in a separate packet.

The drink would also have greater utility for field use if it contained electrolytes consistent with the concentrations recommended by the National Academy of Sciences (Committee on Military Nutrition Research, 1994). While the ERGO Drink was

developed as a carbohydrate supplement rather than a fluid-electrolyte replacement product, there is little reason that it could not serve both purposes. The addition of sodium, chloride, and potassium, in quantities closely approximating those amounts lost in sweat (15-30 mEq/L sodium, 15-30 mEq/L chloride, 2-5 mEq/L potassium) would provide an electrolyte source when ration intake may be insufficient to replace daily electrolyte losses. During work periods with a high water turnover and little electrolyte replacement, soldiers and athletes are under the greatest risk for heat cramps, salt-depletion heat exhaustion, and clinical symptoms associated with hyponatremia (Ladell, 1957; Garigan and Ristedt, 1999; Speedy et al., 1999). The latter condition, which is potentially life threatening, can be avoided during prolonged work by ingestion of small amounts of salt. If the ERGO Drink contained electrolytes, it could serve as a source of both carbohydrates and electrolytes for persons likely to under-eat during field operations. Additionally, small amounts of sodium chloride would enable the drink to serve as an oral rehydration solution during periods of gastrointestinal illness, a condition common to military operations.

The ERGO Drink was developed as a liquid carbohydrate supplement to combat the under-feeding which occurs during military field training. As a beverage, however, it can also be a helpful fluid replacement solution as persons will voluntarily drink more of a flavored, sweetened drink than water alone (Hubbard et al., 1984). Under most military situations, a 12% solution is acceptable as both a carbohydate energy source and as a fluid replacement source. Because of the ERGO Drink's relatively high concentration of carbohydrate, it slightly compromises gastric emptying and rehydration during periods of profuse sweating (for review, Coyle and Montain, 1991). The

relatively lower sweating rates elicited by military scenarios versus sports competition, makes this a smaller concern. Furthermore, during situations in which high rates of fluid replacement are required to sustain performance, the ERGO Drink can be diluted in half to optimize carbohydrate and water absorption.

CONCLUSIONS

The ERGO Drink was given high approval ratings by troops working in a field. The sweetness, flavoring, packaging and ease of use combined to recommend it as an extremely valuable supplement to field rations.

RECOMMENDATIONS

1. Further refinements in product packaging should be pursued, such as a package that can be also used as a cup, as the majority of Marines chose to dilute the product directly in the package or consume it dry rather than use their canteen cup.
2. Electrolytes should be added to the ERGO Drink to make it a more versatile beverage for hot weather field use.
3. The remaining ERGO Drink flavors should be examined for acceptability during field training.
4. Additional studies should be performed to:
    a. Examine interaction of multiple flavors on acceptability and use during field operations.
    b. Examine acceptability and use when rations are not purposefully restricted.
    c. Examine acceptability of different forms of packaging during field training.

d. Examine the influence of ERGO Drink availability on mission performance during sustained operations.

e. Examine the influence of ERGO Drink on nutrient intake during field training.

5. The ERGO Drink should be compared to commercial sports beverages for acceptability and ergogenic effects.

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APPENDIX A. CARBOHYDRATE DRINK QUESTIONNAIRE

Carbohydrate Beverage Acceptability Survey

MARKING INSTRUCTIONS

- **Use a No. 2 pencil only.**
- **Do not use ink, ballpoint, or felt tip pens.**
- **Make solid marks that fill the response completely.**
- **Erase cleanly any marks you wish to change.**
- **Make no stray marks on this form.**

CORRECT: ● **INCORRECT:** ⊘ ⊗ ◒ ◔

ID NUMBER

DATE

MONTH: Jan, Feb, Mar, Apr, May, June, July, Aug, Sept, Oct, Nov, Dec

DAY

YEAR

Product Acceptability

1. Using the scale below, please rate, overall, how much you liked or disliked the following aspects of the carbohydrate beverage.

	Did Not Eat/Drink	Dislike Extremely	Dislike Very Much	Dislike Moderately	Dislike Slightly	Neither like nor Dislike	Like Slightly	Like Moderately	Like Very Much	Like Extremely
Appearance	0	1	2	3	4	5	6	7	8	9
Flavor	0	1	2	3	4	5	6	7	8	9
Smell	0	1	2	3	4	5	6	7	8	9
Sweetness	0	1	2	3	4	5	6	7	8	9

Comment(s):_____

_____

Do not write in this box 0 1 2 3 4 5 6 7 8 9

2. Please rate how much you liked or disliked the following flavor(s). Please fill in a bubble for each flavor.

	Did Not Eat/Drink	Dislike Extremely	Dislike Very Much	Dislike Moderately	Dislike Slightly	Neither like nor Dislike	Like Slightly	Like Moderately	Like Very Much	Like Extremely
Lemon/Lime	0	1	2	3	4	5	6	7	8	9
Lemon	0	1	2	3	4	5	6	7	8	9
Tropical Fruit	0	1	2	3	4	5	6	7	8	9
Punch	0	1	2	3	4	5	6	7	8	9
Orange	0	1	2	3	4	5	6	7	8	9
Raspberry	0	1	2	3	4	5	6	7	8	9

What other flavors would you like?_____

_____

Do not write in this box 0 1 2 3 4 5 6 7 8 9

Product Packaging

3. Using the scale below, please rate the package size.

Much Too Small	Somewhat Too Small	Just Right	Somewhat Too Large	Much Too Large
1	2	3	4	5

4. Using the scale below, please rate the ease of opening the package.

Extremely Difficult	Very Difficult	Moderately Difficult	Somewhat Difficult	Neither Easy or Difficult	Somewhat Easy	Moderately Easy	Very Easy	Extremely Easy
1	2	3	4	5	6	7	8	9

5. Please rate the ease of using the product.

Extremely Difficult	Very Difficult	Moderately Difficult	Somewhat Difficult	Neither Easy or Difficult	Somewhat Easy	Moderately Easy	Very Easy	Extremely Easy
1	2	3	4	5	6	7	8	9

6. Would you prefer the portion size to be:

Much Smaller	Quite A Bit Smaller	Moderately Smaller	Somewhat Smaller	Neither Smaller or Larger	Somewhat Larger	Moderately Larger	Quite A Bit Larger	Extremely Larger
1	2	3	4	5	6	7	8	9

7. What type of packaging would you prefer for this product? Please fill only one response.

- Soft Package
- Hard Package

8. In what form would you prefer this product? Please fill only one response.

- Powder
- Dissolvable Tablet
- Dissolvable Paste

9. Would the carbohydrate beverage be a valuable supplement to your field rations?

Extremely Unlikely	Very Unlikely	Moderately Unlikely	Somewhat Unlikely	Neither likely or unlikely	Somewhat Likely	Moderately Likely	Very Likely	Extremely Likely
1	2	3	4	5	6	7	8	9

Product Utility

10. Would you eat/drink this item if it were available as a supplement to your field rations?

Extremely Unlikely	Very Unlikely	Moderately Unlikely	Somewhat Unlikely	Neither likely or unlikely	Somewhat Likely	Moderately Likely	Very Likely	Extremely Likely
1	2	3	4	5	6	7	8	9

11. Using the scale below, please rate how likely you would be to use this product during:

	Extremely Unlikely	Very Unlikely	Moderately Unlikely	Somewhat Unlikely	Neither likely or unlikely	Somewhat Likely	Moderately Likely	Very Likely	Extremely Likely
Garrison training	1	2	3	4	5	6	7	8	9
Field training:									
When field kitchen is available	1	2	3	4	5	6	7	8	9
When MRE is primary food source	1	2	3	4	5	6	7	8	9

12. Using the scale below, please rate how likely you would be to use the carbohydrate beverage during:

	Extremely Unlikely	Very Unlikely	Moderately Unlikely	Somewhat Unlikely	Neither likely or unlikely	Somewhat Likely	Moderately Likely	Very Likely	Extremely Likely
Physical Activity	1	2	3	4	5	6	7	8	9
Rest Periods	1	2	3	4	5	6	7	8	9
Meal Time	1	2	3	4	5	6	7	8	9

13. Overall, how much do you like or dislike the carbohydrate beverage?

Did Not Eat	Dislike Extremely	Dislike Very Much	Dislike Moderately	Dislike Slightly	Neither like nor Dislike	Like Slightly	Like Moderately	Like Very Much	Like Extremely
0	1	2	3	4	5	6	7	8	9

14. What is your age today?

Please write your response in the blank boxes, then fill in the corresponding circles.

age [ ][ ]

	1	2	3	4	5	6
0	1	2	3	4	5	6
1	1	2	3	4	5	6
2	1	2	3	4	5	6
3	1	2	3	4	5	6
4	1	2	3	4	5	6
5	1	2	3	4	5	6
6	1	2	3	4	5	6
7	1	2	3	4	5	6
8	1	2	3	4	5	6
9	1	2	3	4	5	6

15. What is your gender?

- (M) Male
- (F) Female

16. Are you a nutritional supplement user?

Y Yes

N No (please go to question number 17)

	Never/hardly	Once in a while	1-6 times per week	Once a day
Vitamins/minerals	○	○	○	○
Amino acids/protein (including creatine)	○	○	○	○
Herbal Preparations (e.g., ginseng, garlic, etc.)	○	○	○	○
Carbohydrate-Electrolyte Beverages	○	○	○	○
Carbohydrate Sports Bars	○	○	○	○
Carbohydrate Gels	○	○	○	○
Other_____	○	○	○	○

Do not write in this box 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9

17. Do the current field rations meet your nutritional needs?

Y Yes (please go to question number 18)

N No

In NO, why not?_____

_____

Do not write in this box 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9

18. Do you think that nutritional supplements should be added to field rations?

Y Yes

N No

19. Do you think the carbohydrate beverage could improve your performance?

Y Yes

N No

Do you have any suggestions for improving the product? _____

_____

_____

Do not write in this box 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9

20. During this field exercise, did you consume the ERGO drink as:

	Never	Some of Time	Half of Time	Most of Time	Always
Dry Powder	O	O	O	O	O
Dissolved in Canteen Cup	O	O	O	O	O
Dissolved in Canteen	O	O	O	O	O
Dissolved in ERGO package	O	O	O	O	O
Other	O	O	O	O	O

If 'other', please describe: _____

21. Additional Comments: _____

_____

_____

_____

_____

Thank You!

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